# 更換計算伺服器UCS C240 M4 - CPAR

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# 簡介

本文檔介紹在Ultra-M設定中替換故障計算伺服器所需的步驟。

此過程適用於使用NEWTON版本的Openstack環境,其中Elastic Series Controller(ESC)不管理 Cisco Prime Access Registrar(CPAR),並且CPAR直接安裝在Openstack上部署的VM上。

# 背景資訊

Ultra-M是經過預打包和驗證的虛擬化移動資料包核心解決方案,旨在簡化VNF的部署。 OpenStack是適用於Ultra-M的虛擬化基礎架構管理器(VIM),包含以下節點型別:

- 對象儲存磁碟 計算(OSD 計算)
- 控制器
- OpenStack平台 導向器(OSPD)

Ultra-M的高級體系結構及涉及的元件如下圖所示:



本文檔面向熟悉Cisco Ultra-M平台的思科人員,詳細說明了在OpenStack和Redhat作業系統上執行 的步驟。

附註: Ultra M 5.1.x版本用於定義本文檔中的過程。

# 縮寫

澳門幣	程式方法
OSD	對象儲存磁碟
OSPD	OpenStack平台導向器
硬碟	硬碟驅動器
固態硬碟	固態驅動器
VIM	虛擬基礎架構管理員
虛擬機器	虛擬機器
EM	元素管理器
UAS	Ultra自動化服務

# MoP的工作流程



# 必要條件

## 備份

在替換**Compute**節點之前,請務必檢查Red Hat OpenStack平台環境的當前狀態。建議您檢查當前 狀態,以避免**Compute**替換過程處於開啟狀態時出現問題。通過這種更換流程可以實現這一點。

在進行恢復時,思科建議使用以下步驟備份OSPD資料庫:

```
[root@ al03-pod2-ospd ~]# mysqldump --opt --all-databases > /root/undercloud-all-databases.sql
[root@ al03-pod2-ospd ~]# tar --xattrs -czf undercloud-backup-`date +%F`.tar.gz
/root/undercloud-all-databases.sql
/etc/my.cnf.d/server.cnf /var/lib/glance/images /srv/node /home/stack
tar: Removing leading `/' from member names
此過程可確保在不影響任何例項可用性的情況下替換節點。
```

**附註**:確保您擁有該例項的快照,以便在需要時恢復虛擬機器。請按照以下步驟操作,瞭解如 何拍攝虛擬機器的快照。

# 確定計算節點中託管的VM

確定託管在計算伺服器上的虛擬機器。

[stack@al03-pod2-ospd ~]\$ nova listfi	ield name,host	
++	+	+
ID   Host	Name	
++		
46b4b9eb-ala6-425d-b886-a0ba760e6114   4.localdomain	AAA-CPAR-testing-instance	pod2-stack-compute-
3bc14173-876b-4d56-88e7-b890d67a4122   3.localdomain	aaa2-21	pod2-stack-compute-
f404f6ad-34c8-4a5f-a757-14c8ed7fa30e   3.localdomain	aaa21june	pod2-stack-compute-
++	+	+

**附註**:此處顯示的輸出中,第一列對應於通用唯一識別符號(UUID),第二列是VM名稱,第三 列是存在VM的主機名。此輸出的引數將在後續章節中使用。

快照流程

## CPAR應用關閉

步驟1.開啟連線到網路的任何SSH客戶端並連線到CPAR例項。

重要的一點是,不要同時關閉一個站點內的所有4個AAA例項,而要逐個關閉。

步驟2.使用以下命令關閉CPAR應用程式:

/opt/CSCOar/bin/arserver stop

消息顯示「Cisco Prime Access Registrar Server Agent shutdown complete」。應該出現了。

**附註**:如果使用者保持開啟的CLI會話,則arserver stop命令將無效,並顯示以下消息:

ERROR: You can not shut down Cisco Prime Access Registrar while the CLI is being used. Current list of running CLI with process id is:

**2903** /opt/CSCOar/bin/aregcmd -s

在此示例中,需要終止突出顯示的進程ID 2903,然後才能停止CPAR。如果是這種情況,請使用以 下命令終止進程:

kill -9 \*process\_id\* **然後重複步驟1。** 

步驟3.使用以下命令驗證CPAR應用確實關閉:

/opt/CSCOar/bin/arstatus 應顯示以下消息:

Cisco Prime Access Registrar Server Agent not running Cisco Prime Access Registrar GUI not running

## VM快照任務

步驟1.輸入與當前正在處理的站點(城市)對應的Horizon GUI網站。訪問「Horizon(地平線)」 時,將觀察影象中所示的螢幕:

# **RED HAT** OPENSTACK PLATFORM

If you are not sure which authentication method to use, contact your administrator.

cpar		
Password *		
******	۲	
	Connect	

步驟2.如圖所示,導覽至**專案>例項**。

e ⇒ c	C Not secure // /dashboard/project/instances/					
RED HAT OPEN	Project Admin	Identity				
Compute	Network ~	Orchestratio	in v	Object Store ~		
Overview	Instances 2	Volumes	Images	Access & Security		

如果使用的使用者為cpar,則此選單中只顯示4個AAA例項。

步驟3.一次僅關閉一個例項,重複本文檔中的整個過程。要關閉VM,請導航到**操作>關閉例項**並確 認選擇。

## Shut Off Instance

步驟4 驗證例項是否確實通過Status = Shutoff和Power State = Shutdown關閉。

Size	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions	
AAA-CPAR	-	Shutoff	AZ-dalaaa09	None	Shut Down	3 months, 2 weeks	Start Instance -	

此步驟結束CPAR關閉過程。

## 虛擬機器快照

一旦CPAR VM關閉,可以並行拍攝快照,因為它們屬於獨立的計算。

四個QCOW2檔案是並行建立的。

獲取每個AAA例項的快照(25分鐘–1小時)(使用qcow映像作為源的例項為25分鐘,使用原始映 像作為源的例項為1小時)。

步驟1.登入POD的Openstack的Horizon GUI。

步驟2.登入後,進入頂部選單上的Project > Compute > Instances部分,並查詢AAA例項。

RED H	AT OPENSTACK PLATFORM	Project Admin Ide	ntity								Р	roject ~	Help .	1. cpar ~
Comp	oute Network ~	Orchestration ~	Object Store ~											
Over	view Instances	Volumes Ima	ges Access & Securit	у										
Projec	t / Compute / Instance	95												
Ins	stances													
				Instance Name =	•			Filter	Launch Ins	tance	💼 Delete Insta	ances	More Act	ons 🕶
	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Time	since created	Action	s	
	aaa-cpar_new_blr		tb1-mgmt 172.16.181.15 Floating IPs: 10.225.247.235 radius-routable1 10.160.132.249 diameter-routable1 10.160.132.235	aaa-cpar_new	-	Active	AZ-aaa	None	Running	1 mon	th, 1 week	Creat	e Snapshol	
10.225.24	7.214/dashboard/project/	images//create/	tb1-mgmt											

步驟3.按一下Create Snapshot繼續建立快照(需要在相應的AAA例項上執行該操作)。

RED HJ	T OPENSTACK PLATFORM	Project Admi				Project 🗸 🛛 Help 👤 cpar 🗸
Comp	iew Instances	Orchestra Volumes	Create Snapshot		ж	
Project	t / Compute / Instance	S	Snapshot Name * snapshot3-20june		Description: A snapshot is an image which preserves the disk state of a running instance.	
	Instance Name	Image			Cancel Create Snapshot	e Totelete Instances More Actions - e since created Actions
0	aaa-cpar_new_bir		tb1-mgmt 172.16.181.15 Floating IPs: 10.225.247.235 radius-routable1 10.160.132.249 diameter-routable1 10.160.132.235	aaa-opar_new -	Active AZ-aaa None Running <sup>-</sup>	I month, 1 week Create Snapshot 💌
			tb1-mgmt • 172.16.181.14			

## 步驟4.執行快照後,導航到Images選單,驗證快照是否完成並報告沒有問題。

RED	HAT	OPENSTACK PLATFO	RM Project Admin Identity						Project	t ∨ Help <b>1</b> cpar ∨
Co	npute	e Network	<ul> <li>Orchestration - Obj</li> </ul>	ect Store 🗸						
Ov	ervie	w Instance	s Volumes Images	Access & Secur	ity					
In	าล	ges								
Q	С	lick here for filter	s.					×	+ Create Image	🛍 Delete Images
		Owner	Name 🕈	Туре	Status	Visibility	Protected	Disk Format	Size	
	>	Core	cluman_snapshot	Image	Active	Shared with Project	No	RAW	100.00 GB	Launch -
	>	Core	ESC-image	Image	Active	Shared with Project	No	QCOW2	925.06 MB	Launch -
C	>	Core	rebuild_cluman	Image	Active	Shared with Project	No	QCOW2	100.00 GB	Launch -
C	>	Cpar	rhel-guest-image-testing	Image	Active	Public	No	QCOW2	422.69 MB	Launch -
C	>	Cpar	snapshot3-20june	Image	Active	Private	No	QCOW2	0 bytes	Launch -
	>	Cpar	snapshot_cpar_20june	Image	Active	Private	No	QCOW2	0 bytes	Launch -
C	>	Cpar	snapshot_cpar_20june	Image	Active	Private	No	QCOW2	0 bytes	Launch -

## 步驟5.下一步是以QCOW2格式下載快照,並將其傳輸到遠端實體,以防OSPD在此過程中丟失。為 此,請在OSPD級別使用此命令**glance image-list**標識快照

<pre>[root@elospd01 stack]# glance image-lis +</pre>	st	+	
ID	Name	l	+
80f083cb-66f9-4fcf-8b8a-7d8965e47bld 3f3c-4bcc-aela-8f2ab0d8b950   ELP1 clum	AAA-Temporary nan 10_09_2017	I	22f8536b-
70ef5911-208e-4cac-93e2-6fe9033db560	ELP2 cluman 10_09_2017	I	
e0b57fc9-e5c3-4b51-8b94-56cbccdf5401	ESC-image	I	
92dfe18c-df35-4aa9-8c52-9c663d3f839b	lgnaaa01-sept102017		

| 1461226b-4362-428b-bc90-0a98cbf33500 | tmobile-pcrf-13.1.1.iso |

98275e15-37cf-4681-9bcc-d6ba18947d7b | tmobile-pcrf-13.1.1.qcow2 |

+----+

步驟6.一旦識別出要下載的快照(在本例中為以上綠色標籤的快照),便會通過此命令glance image-download以QCOW2格式下載該快照,如下所示。

[root@elospd01 stack]# glance image-download 92dfe18c-df35-4aa9-8c52-9c663d3f839b --file
/tmp/AAA-CPAR-LGNoct192017.qcow2 &

- 「&」將進程傳送到後台。完成此操作需要一些時間,一旦完成,映像就可以位於/tmp目錄中。
- •將進程傳送到後台時,如果連線丟失,則進程也會停止。
- 運行命令disown -h,以便在安全外殼(SSH)連線丟失的情況下,該進程仍在OSPD上運行並完成。

#### 步驟7.下載過程完成後,需要執行壓縮過程,因為作業系統處理的過程、任務和臨時檔案可能使 ZEROES填充該快照。用於檔案壓縮的命令是virt-sparsify。

[root@elospd01 stack]# virt-sparsify AAA-CPAR-LGNoct192017.qcow2 AAA-CPAR-

LGNoct192017\_compressed.qcow2

此過程需要一些時間(大約10-15分鐘)。 完成後,生成的檔案就是下一步中指定的需要傳輸到外 部實體的檔案。

需要驗證檔案完整性,為了做到這一點,請運行下一個命令,並在輸出結尾查詢corrupted屬性。

[root@wsospd01 tmp]# qemu-img info AAA-CPAR-LGNoct192017\_compressed.qcow2 image: AAA-CPAR-LGNoct192017\_compressed.qcow2 file format: qcow2 virtual size: 150G (161061273600 bytes) disk size: 18G cluster\_size: 65536 Format specific information:

compat: 1.1

lazy refcounts: false

refcount bits: 16

corrupt: false

為了避免丟失OSPD的問題,需要將最近在QCOW2格式上建立的快照轉移到外部實體。在開始檔 案傳輸之前,我們必須檢查目標是否有足夠的可用磁碟空間,使用命令df-kh以驗證記憶體空間。建 議通過SFTP sftp root@x.x.x.x(其中x.x.x.是遠端OSPD的IP)臨時將其傳輸到其他站點的 OSPD。為了加快傳輸速度,可以將目標傳送到多個OSPD。同樣,也可以使用此命令scp \*name\_of\_the\_file\*.qcow2 root@ x.x.x.x:/tmp(其中x.x.x.x是遠端OSPD的IP)將檔案傳輸到另一個 OSPD。



關閉節點電源

1. 要關閉例項電源,請執行以下操作:nova stop <INSTANCE\_NAME>

2. 現在您會看到處於關閉狀態的例項名稱。

[stack@director ~]\$ nova s	top aaa2-21		
Request to stop server aaa	2-21 has been accepted.		
[stack@director ~]\$ nova l	ist		
+	++	+++	+
+			
ID Power State   Networks 	Name	Status   Task Sta	ate
+		++	+
+			
46b4b9eb-a1a6-425d-b886- Running   tbl-mgmt=172 routable1=10.160.132.231	a0ba760e6114   AAA-CPAR-testing .16.181.14, 10.225.247.233; rad	g-instance   ACTIVE   - lius-routable1=10.160.132.245;	 diameter-
3bc14173-876b-4d56-88e7- Shutdown   diameter-rou mgmt=172.16.181.7, 10.225.	b890d67a4122   aaa2-21 table1=10.160.132.230; radius-r 247.234	SHUTOFF   - routable1=10.160.132.248; tb1-	I
f404f6ad-34c8-4a5f-a757- Running   diameter-rou mgmt=172.16.181.10	14c8ed7fa30e   aaa21june table1=10.160.132.233; radius-r 	ACTIVE   - routable1=10.160.132.244; tb1-	I
+	++	++	+

# 計算節點刪除

不論計算節點中託管的VM,本節中提到的步驟都是通用的。

## 從服務清單中刪除計算節點

從服務清單中刪除compute服務:

[stack@director ~]\$ openstack compute service list |grep compute-3

| 138 | nova-compute | pod2-stack-compute-3.localdomain | AZ-aaa | enabled | up | 2018-06-21T15:05:37.000000 |

## openstack 計算 service delete <ID>

[stack@director ~]\$ openstack compute service delete 138

## 刪除中子代理

#### 刪除compute伺服器的舊關聯中子代理和open vswitch代理:

[stack@director ~]\$ openstack network agent list | grep compute-3

| 3b37fald-0ld4-404a-886f-ff68ceclccb9 | Open vSwitch agent | pod2-stack-compute-3.localdomain | None | True | UP | neutron-openvswitch-agent |

#### openstack network agent delete <ID>

[stack@director ~]\$ openstack network agent delete 3b37fald-01d4-404a-886f-ff68cec1ccb9 從Ironic資料庫中刪除

從具有諷刺意味的資料庫中刪除節點並對其進行驗證:

### nova show <計算-node> | grep hypervisor

```
[root@director ~]# source stackrc
[root@director ~]# nova show pod2-stack-compute-4 | grep hypervisor
| OS-EXT-SRV-ATTR:hypervisor_hostname | 7439ea6c-3a88-47c2-9ff5-0a4f24647444
```

## ironic node-delete <ID>

```
[stack@director ~]$ ironic node-delete 7439ea6c-3a88-47c2-9ff5-0a4f24647444
[stack@director ~]$ ironic node-list
現在不能在ironic node-list中列出已刪除的節點。
```

## 從超雲中刪除

步驟1.使用所示內容建立名為delete\_node.sh的指令碼檔案。請確保提到的模板與用於堆疊部署的 deploy.sh指令碼中使用的模板相同:

#### delete\_node.sh

openstack overcloud node delete --templates -e /usr/share/openstack-tripleo-heattemplates/environments/puppet-pacemaker.yaml -e /usr/share/openstack-tripleo-heattemplates/environments/network-isolation.yaml -e /usr/share/openstack-tripleo-heattemplates/environments/storage-environment.yaml -e /usr/share/openstack-tripleo-heattemplates/environments/neutron-sriov.yaml -e /home/stack/custom-templates/network.yaml -e /home/stack/custom-templates/ceph.yaml -e /home/stack/custom-templates/compute.yaml -e /home/stack/custom-templates/layout.yaml -e /home/stack/custom-templates/layout.yaml --stack <stack-name> <UUID>

[stack@director ~]\$ source stackrc [stack@director ~]\$ /bin/sh delete\_node.sh + openstack overcloud node delete --templates -e /usr/share/openstack-tripleo-heattemplates/environments/puppet-pacemaker.yaml -e /usr/share/openstack-tripleo-heat-

```
templates/environments/network-isolation.yaml -e /usr/share/openstack-tripleo-heat-
templates/environments/storage-environment.yaml -e /usr/share/openstack-tripleo-heat-
templates/environments/neutron-sriov.yaml -e /home/stack/custom-templates/network.yaml -e
/home/stack/custom-templates/ceph.yaml -e /home/stack/custom-templates/compute.yaml -e
/home/stack/custom-templates/layout.yaml -e /home/stack/custom-templates/layout.yaml --stack
pod2-stack 7439ea6c-3a88-47c2-9ff5-0a4f24647444
Deleting the following nodes from stack pod2-stack:
- 7439ea6c-3a88-47c2-9ff5-0a4f24647444
Started Mistral Workflow. Execution ID: 4ab4508a-cld5-4e48-9b95-ad9a5baa20ae
```

sys 0m0.086s 步驟2.等待OpenStack堆疊操作變為COMPLETE狀態:

[stack@director ~]\$	openstack stack lis	st			<b>.</b>
ID Updated Time	+	Stack Name	Stack Status	Creation Time	
5df68458-095d-43bd- 2018-05-08T20:42:48Z	+ -a8c4-033e68ba79a0   	pod2-stack	UPDATE_COMPLETE	2018-05-08T21:30:06Z	+
+					+

# 安裝新的計算節點

real

user

0m52.078s 0m0.383s

有關安裝新UCS C240 M4伺服器的步驟和初始設定步驟,請參閱<u>Cisco UCS C240 M4伺服器安裝</u> <u>和服務指南</u>

步驟1.安裝伺服器後,將硬碟插入相應插槽中作為舊伺服器。

步驟2.使用CIMC IP登入到伺服器。

步驟3.如果韌體與以前使用的推薦版本不一致,請執行BIOS升級。BIOS升級步驟如下:<u>Cisco UCS</u> <u>C系列機架式伺服器BIOS升級指南</u>

步驟4.要驗證未配置**良好**的物理驅動器的狀態,請導航到**儲存> Cisco 12G SAS模組化Raid控制器** (SLOT-HBA)>**物理驅動器資訊**。

	æ dudu C	isco Integrated Manag	ement Cont	roller	-	÷ 🗹 0	admin@10.65.33.67	7 - C240-FCH2114V1NW 🕻
Chassis •	♠ / / Cisco 1 (SLOT-HBA)	2G SAS Modular Raid / Physical Drive Info	Controller		Refresh	Host Power Lau	nch KVM   Ping   Ret	boot   Locator LED   🙆 (
Compute	Controller Info	Physical Drive Info Virt	ual Drive Info	Battery Backup Unit	Storage Log			
Networking +	♥ Physical Driv	Physical Drives						Selected 0 / Total 2 💠 +
Storage •	PD-1	Make Global Hot Spare	Make Dedic	ated Hot Spare	move From Hot Spare Poo	ols	r Removal	»
Cisco 12G SAS Modular Raid	20 PD-2	Controller	Phy	vsical Drive Number	Status	Health	Boot Drive	Drive Firmware
Cisco FlexFlash	co FlexFlash	SLOT-HBA	1 2		Unconfigured Good Unconfigured Good	Good Good	false false	N003 N003
Admin •	and a second provide second							

步驟5。若要從RAID級別為1的物理驅動器建立虛擬驅動器,請導航到Storage > Cisco 12G SAS Modular Raid Controller(SLOT-HBA)> Controller Info > Create Virtual Drive from Unused Physical Drives。

		Freate	Virtual Dri	ve from Unu	sed Physical	Drives					0
Chassis			RA	UD Level: 1			•	Enable Full Disk Enco	ryption:		
Compute											
Sea		Creat	te Drive G	roups							
Networking		Physi	ical Drives	8		Selected 2 /	Total 2 🔾	9 - <sup>1</sup>	Drive Groups		φ.
Storage	*		ID S	ize(MB)	Model	Interface	Туре		Name		
Cisco 12G SAS Modu	lar Raid		1 19	06394 MB	SEAGA	HDD	SAS	100000	No data available		
Cisco FlexFlash			2 19	06394 MB	SEAGA	HDD	SAS	>>			
Admin											
		Virtu	al Drive Pr	roperties							
				lame: RAID1				Disk Cache Policy:	Unchanged	•	
			Access P	olicy: Read	Write		•	Write Policy:	Write Through	•	
			Read P	olicy: No Re	ad Ahead		•	Strip Size (MB):	64k	*	
			100000000000000000000000000000000000000	Carton Treasons	100		100				i and

	- 14 N	😫 diala Cisco	integrated Mar	agement Control	ler			
	+	Create Virtual Drive fro	m Unused Physic	al Drives				• >
Chassis	٠	RAID Lev	el: 1	•	Enable Full Disk Enc	ryption:		- 1
Compute								- 1
Networking	•	Create Drive Groups Physical Drives		Selected 0 / Total 0	¢.	Drive Groups		٥.
Storage	.*	ID Size(MB)	Model	Interface Type		Name		
Cisco 120 SAS M	lodular Raid	No data available				DG [1.2]		
Cisco FlexFlash					44			- 1
Admin								- 1
		Virtual Drive Propert	ies					
		Name:	BOOTOS		Disk Cache Policy:	Unchanged		- 1
		Access Policy:	Read Write	٣	Write Policy:	Write Through	•	- 1
		Read Policy:	No Read Ahead	*	Strip Size (MB):	64k	*	
		Cache Policy:	Direct IO	*	Size	1906394		MB

步驟6.選擇VD並設定Set as Boot Drive,如下圖所示。

	Ŧ	¥ dualu C	isco Integrated I	Management Co	ntroller	_
Chassis	۲	↑ / / Cisco (SLOT-HBA)	12G SAS Modula / Virtual Drive In	ar Raid Controlle	r	Refresh
Compute		Controller Info	Physical Drive Info	Virtual Drive Info	Battery Backup	Unit Storage Log
Networking	٠	✓ Virtual Drives	Virtual Drives			
Storage		💟 VD-0	Initialize	Cancel Initialization	Set as Boot Drive	Delete Virtual Drive
Cisco 12G SAS Modu	alar Ra Store	age	Virtual Drive	Number Nar	ne	Status
Cisco FlexFlash			3 0	BOC	DTOS	Optimal
Admin						

步驟7.若要啟用IPMI over LAN,請導覽至Admin > Communication Services > Communication Services,如下圖所示。

	Ŧ		ed Ma	anagement	Controller		
Chassis	+	↑ / / Communication Ser	vices	/ Commur	nications Servio	ces 🖈	
Compute		Communications Services SN	MP	Mail Alert			Refresh
Networking							
Storage	+	HTTP Properties		Pagela	- Timesulfaces deb	1800	▼ IPMI o
Admin	•	Redirect HTTP to HTTPS Enabled:		305510	Max Sessions:	4	
User Management		HTTPS Port:	443		Active Sessions:	1	
Networking		VML ADI Proportion					
Communication Services		XML API Properties XML API Enabled:	$\checkmark$				

步驟8.若要停用超執行緒,請導覽至**Compute** > BIOS > Configure BIOS > Advanced > Processor Configuration。

**附註**:此處顯示的影象和本節中提到的配置步驟是參考韌體版本3.0(3e),如果您使用其他版本,可能會有細微的變化。

	Ŧ		o Integrate	d Manag	ement (	Controller		
Chassis	•	A / Compute / BIC	os ★					
Compute		BIOS Remote Ma	inagement	Troublesh	ooting	Power Policies	PID Catalog	Refres
Networking	•	Enter BIOS Setup   Clea	r BIOS CMOS	Restore Ma	nufacturing	Custom Settings		
Storage	•	Configure BIOS	Configure Bo	oot Order	Configu	re BIOS Profile		
Admin	×	Main Advanced	Server I	Managemen	ıt			
Networking Storage Admin		Note: Default value	es are shown in b Reboot I or Configura	old. Host Immedia ation	ately: 🗌			
			Intel(R) Hyp	per-Threading	g Technolo	gy Disabled		•
			-	Exe	ecute Disat	ble Enabled		¥
					Intel(R) VT	f-d Enabled		•
			ار ار	ntel(R) Pass 1	Through DM	A Disabled		•
		1	ntel(R) Pass T	hrough DMA	ATS Suppo	ort Enabled		•

# 將新計算節點新增到超雲中

不論計算節點託管的VM,本節中提到的步驟都常見。

步驟1.使用不同的索引新增Compute伺服器

建立一個add\_node.json檔案,該檔案僅包含要新增的新**計算**伺服器的詳細資訊。請確保以前未使用 過新**計算**伺服器的索引號。通常,遞增下一個最**高計算**值。

範例:最高驗前是compute-17,因此,在2-vnf系統的情況下建立了compute-18。

附註:請記住json格式。

```
[stack@director ~]$ cat add_node.json
{
    "nodes":[
        {
        "mac":[
                          "<MAC_ADDRESS>"
        ],
        "capabilities": "node:compute-18,boot_option:local",
        "cpu":"24",
        "memory":"256000",
        "disk":"3000",
        "arch":"x86_64",
        "pm_type":"pxe_ipmitool",
```

```
"pm_user":"admin",
"pm_password":"<PASSWORD>",
"pm_addr":"192.100.0.5"
}
]
步驟2.匯入json檔案。
```

[stack@director ~]\$ openstack baremetal import --json add\_node.json Started Mistral Workflow. Execution ID: 78f3b22c-5c11-4d08-a00f-8553b09f497d Successfully registered node UUID 7eddfa87-6ae6-4308-b1d2-78c98689a56e Started Mistral Workflow. Execution ID: 33a68c16-c6fd-4f2a-9df9-926545f2127e Successfully set all nodes to available.

#### 步驟3.使用上一步中提到的UUID運行節點內檢。

```
[stack@director ~]$ openstack baremetal node manage 7eddfa87-6ae6-4308-bld2-78c98689a56e
[stack@director ~]$ ironic node-list |grep 7eddfa87
| 7eddfa87-6ae6-4308-b1d2-78c98689a56e | None | None
                                                                                  | power off
  manageable
                      False
[stack@director ~]$ openstack overcloud node introspect 7eddfa87-6ae6-4308-bld2-78c98689a56e --
provide
Started Mistral Workflow. Execution ID: e320298a-6562-42e3-8ba6-5ce6d8524e5c
Waiting for introspection to finish...
Successfully introspected all nodes.
Introspection completed.
Started Mistral Workflow. Execution ID: c4a90d7b-ebf2-4fcb-96bf-e3168aa69dc9
Successfully set all nodes to available.
[stack@director ~]$ ironic node-list |grep available
| 7eddfa87-6ae6-4308-b1d2-78c98689a56e | None | None
                                                                                  | power off
  available
                      False
步驟4.運行以前用於部署堆疊的deploy.sh指令碼,以便將新計算機新增到超雲堆疊:
```

```
[stack@director ~]$ ./deploy.sh
++ openstack overcloud deploy --templates -r /home/stack/custom-templates/custom-roles.yaml -e
/usr/share/openstack-tripleo-heat-templates/environments/puppet-pacemaker.yaml -e
/usr/share/openstack-tripleo-heat-templates/environments/network-isolation.yaml -e
/usr/share/openstack-tripleo-heat-templates/environments/storage-environment.yaml -e
/usr/share/openstack-tripleo-heat-templates/environments/neutron-sriov.yaml -e
/home/stack/custom-templates/network.yaml -e /home/stack/custom-templates/ceph.yaml -e
/home/stack/custom-templates/compute.yaml -e /home/stack/custom-templates/layout.yaml --stack
ADN-ultram --debug --log-file overcloudDeploy_11_06_17__16_39_26.log --ntp-server 172.24.167.109
--neutron-flat-networks phys_pcie1_0, phys_pcie1_1, phys_pcie4_0, phys_pcie4_1 --neutron-network-
vlan-ranges datacentre:1001:1050 --neutron-disable-tunneling --verbose --timeout 180
...
Starting new HTTP connection (1): 192.200.0.1
"POST /v2/action_executions HTTP/1.1" 201 1695
HTTP POST http://192.200.0.1:8989/v2/action_executions 201
Overcloud Endpoint: http://10.1.2.5:5000/v2.0
Overcloud Deployed
clean_up DeployOvercloud:
END return value: 0
```

```
real 38m38.971s
user 0m3.605s
```

sys 0m0.466s

#### 步驟5.等待openstack狀態變為完成。

[stack@director ~]\$ opens	tack stack list			
+   ID Updated Time	Stack Name	Stack Status	Creation Time	
+   5df68458-095d-43bd-a8c4- 2017-11-06T21:40:58Z	033e68ba79a0   ADN-ultram	UPDATE_COMPLETE	2017-11-02T21:30:06Z	
+		+		+

#### 步驟6.檢查新的compute節點是否處於活動狀態。

[root@director ~]# nova list | grep pod2-stack-compute-4
| 5dbac94d-19b9-493e-a366-1e2e2e5e34c5 | pod2-stack-compute-4 | ACTIVE | - |
Running | ctlplane=192.200.0.116 |

# 恢復虛擬機器

### 通過快照恢復例項

恢復過程:

可以使用前面步驟中拍攝的快照重新部署以前的例項。

步驟1 [可選]。如果沒有以前的VMsnapshot可用,則連線到傳送備份的OSPD節點,並將備份傳送 回其原始OSPD節點。通過**sftp** root@x.x.x.x,其中x.x.x.是原始OSPD的IP。將快照檔案儲存在 /tmp目錄中。

步驟2.連線到重新部署例項的OSPD節點。

Last login: Wed May 9 06:42:27 2018 from 10.169.119.213 [root@daucs01-ospd ~]#

使用以下命令獲取環境變數:

# source /home/stack/pod1-stackrc-Core-CPAR 步驟3.要將快照用作影象,必須將其上傳到水平面。使用下一個命令執行此操作。

這個過程可以從地平線看到。

RED H	AT OPENSTACK PLATFORM	Proyecto Administrador Identity							Proyecto ~	Ayuda	1 core ~
Com	pute Red ~ (	Orquestación ~ Almacén de objetos ~									
Viste	general Instancias	Volúmenes Imágenes Acceso y seguridad									
Im	ages										
٩	Pulse aqui para filtros.							× +0	Create Image	Delete I	mages
0	Owner	Nombre *	Тіро	Estado \$	Visibilidad	Protegido	Disk Format	Tamaño			
	> Core	AAA-CPAR-April2018-snapshot	Imagen	Guardando	Privado	No	QCOW2			1 Delete	Image

## 步驟4.在地平線中,導覽至**專案>例項**,然後按一下Launch Instance,如下圖所示。

RED HAT OPENSTACK PLATFORM Project Admin Identity				Project ~	Help 1 core ~
Compute Network v Orchestration v Object Store v					
Overview Instances Volumes Images Access & Security					
Project / Compute / Instances					
Instances					
			Instance Name = •	Filter	dore Actions -
Instance Name	Image Name IP Addres	s Size Key	Pair Status Availability Zone Task	Power State Time since created Actions	

×

## 步驟5.輸入**例項名稱**並選擇**可用區**,如下圖所示。

#### Launch Instance

Details	Please provide the initial hostname for the instance, the availability zone w count. Increase the Count to create multiple instances with the same settir	where it will be deployed, and the instance on the instance of the second
Source *	Instance Name *	Total Instances (100 Max)
Flavor *	dalaaa10	270
	Availability Zone	21%
Networks	AZ-dalaaa10	26 Current Usago
Network Ports	Count *	1 Added 73 Remaining
Security Groups	1	
Key Pair		
Configuration		
Server Groups		
Scheduler Hints		
Metadata		
× Cancel		Back Next >

步驟6.在Source索引標籤中,選擇映像以建立例項。在Select Boot Source功能表中選擇image,此 處將顯示映像的清單,然後選擇您按一下+符號時先前上傳的映像。

#### Launch Instance

Details	Instance source is the template used to create image, or a volume (if enabled). You can also c	an instance. You can u hoose to use persisten	se a snapshot t storage by cr	of an existi eating a ne	ng instance, a w volume.	n 🕜
Source	Select Boot Source	Create	New Volume			
Flavor *	Image	* Yes	No			
Networks *	Allocated					
Network Ports	Name	Updated	Size	Туре	Visibility	
Security Groups	AAA-CPAR-April2018-snapshot	5/10/18 9:56 AM	5.43 GB	qcow2	Private	-
Key Pair	✓ Available 8				ę	Select one
Configuration	Q Click here for filters.					×
Conliguration	Name	Updated	Size	Туре	Visibility	
Server Groups	> redhat72-image	4/10/18 1:00 PM	469.87 MB	qcow2	Private	+
Scheduler Hints	> tmobile-pcrf-13.1.1.qcow2	9/9/17 1:01 PM	2.46 GB	qcow2	Public	+
Welduata	> tmobile-pcrf-13.1.1.iso	9/9/17 8:13 AM	2.76 GB	iso	Private	+
	> AAA-Temporary	9/5/17 2:11 AM	180.00 GB	qcow2	Private	+
	> CPAR_AAATEMPLATE_AUGUST222017	8/22/17 3:33 PM	16.37 GB	qcow2	Private	+
	> tmobile-pcrf-13.1.0.iso	7/11/17 7:51 AM	2.82 GB	iso	Public	+
	> tmobile-pcrf-13.1.0.qcow2	7/11/17 7:48 AM	2.46 GB	qcow2	Public	+
	> ESC-image	6/27/17 12:45 PM	925.06 MB	qcow2	Private	+

× Cancel

<Back Next>

Launch Instanc

## 步驟7.在Flavor索引標籤中,按一下+符號選擇AAA調味,如下圖所示。

#### Launch Instance

Details	Flavors manage Allocated	e the sizing for	the compu	te, memory and	storage capacity	of the instance.		8
Source	Name	VCPUS	RAM	Total Disk	Root Disk	Ephemeral Disk	Public	
Flavor	> AAA-CPAR	36	32 GB	180 GB	180 GB	0 GB	No	-
Networks *	✓ Available 7	)						Select one
Security Groups	Q Click her	VCPUS	RAM	Total Disk	Root Disk	Ephemeral Disk	Public	×
Key Pair	> pcrf-oam	10	24 GB	100 GB	100 GB	0 GB	Yes	+
Configuration	> pcrf-pd	12	16 GB	100 GB	100 GB	0 GB	Yes	+
Server Groups	> pcrf-qns	10	16 GB	100 GB	100 GB	0 GB	Yes	+
Scheduler Hints	> pcrf-arb	4	16 GB	100 GB	100 GB	0 GB	Yes	+
Metadata	> esc-flavor	4	4 GB	0 GB	0 GB	0 GB	Yes	+
	> pcrf-sm	10	104 GB	100 GB	100 GB	0 GB	Yes	+
	> pcrf-cm	6	16 GB	100 GB	100 GB	0 GB	Yes	+

× Cancel

<Back Next>

Launch Instance

步驟8.現在導航到Networks頁籤,並在您點選+符號時選擇例項所需的網路。在這種情況下,請選擇 diameter-soutable1、radius-routable1和tb1-mgmt,如下圖所示。

#### Launch Instance

Details	Networks provide the con	nmunication channels for insta	nces in the clo	oud. Sel	lect networks fro	m those listed	elow.
Source	Network	Subnets Assoc	iated	Shared	Admin State	Status	
Flavor	¢1 > radius-routa	able1 radius-routable-s	subnet	Yes	Up	Active	-
Networks	¢2 > diameter-ro	utable1 sub-diameter-rou	utable1	Yes	Up	Active	-
Network Ports	\$3 <b>&gt; tb1-mgmt</b>	tb1-subnet-mgm	t	Yes	Up	Active	-
Security Groups					Select	at least one n	etwork
Key Pair	Q Click here for filter	rs,			061601		×
Configuration	Network	Subnets Associated	Shared	Admin	State S	Status	
Server Groups	> Internal	Internal	Yes	Up	Α	Active	+
Scheduler Hints	> pcrf_dap2_ldap	pcrf_dap2_ldap	Yes	Up	Α	Active	+
Metadata	> pcrf_dap2_usd	pcrf_dap2_usd	Yes	Up	Α	Active	+
	> tb1-orch	tb1-subnet-orch	Yes	Up	Α	Active	+
	> pcrf_dap1_usd	pcrf_dap1_usd	Yes	Up	Α	Active	+
	> pcrf_dap1_sy	pcrf_dap1_sy	Yes	Up	Α	Active	+
	> pcrf_dap1_gx	pcrf_dap1_gx	Yes	Up	Α	Active	+
	> pcrf_dap1_nap	pcrf_dap1_nap	Yes	Up	Α	Active	+
	> pcrf_dap2_sy	pcrf_dap2_sy	Yes	Up	Α	Active	+
	> pcrf dap2 rx	perf dap2 rx	Yes	Up	A	Active	+
× Cancel				< Back	Next>	🔁 Launch II	nstance

## 步驟9.按一下Launch例項建立該例項。可以在Horizon中監控進度:

NEE NAT OFFICIELCE FLATFORM Projecto Administratory Identity														Proyecte	o v Ayuda	1 core ~				
:	Sistema																			
1	fista general	н	lipervisores	Agregados de host	Instancias	Volúmenes	Sabores	Imágenes	Redes	Routers	IPs flotante	s Predeterminados	Definicion	es de los met	adatos	Información del Sistema				
Administrador / Sistema / Instancias																				
Instancias																				
																Proyecto= •		Filtrar	🛢 Eliminar ir	nstancias
	Proye	cto H	lost		Nombre				Nombr	re de la imagen		Dirección IP	Tamaño	Estado	Tarea	Estado de energia	Tiempo desde su cr	reación	Acciones	
	Core	р	od1-stack-com	oute-5.locaidomain	dalasa10				AAA-C	PAR-April2018-sr	napshot	tb1-mgmt 172.16.181.11 radius-routable1 10.178.6.56 diameter-routable1 10.178.6.40	AAA-CPAR	Construir	Generand	Sin estado	1 minuto		Editar instar	icia 💌

## 幾分鐘後,該例項將完全部署並可供使用。

Core	pod 1-stack-compute-5.locatdomain	dalaaa10	AAA-CPAR-April2016-snapshot	tb1-mgmt • 172.16.181.16 IPs flotantes: • 10.1450.62 radius-routable1 • 10.178.596 diameter-routable1	AAA-CPAR	Activo	Ninguno	Ejecutando	8 minutos	Editar instancia 💌
				<ul> <li>10.178.6.40</li> </ul>						

## 建立和分配浮動IP地址

浮動IP地址是可路由地址,這意味著可以從Ultra M/Openstack體系結構外部訪問它,並且能夠與網 路中的其他節點通訊。

步驟1。在Horizon頂部選單中,導航到Admin > Floating IPs。

步驟2.按一下Allocate IP to Project按鈕。

步驟3.在Allocate Floating IP視窗中,選擇新浮動IP所屬的Pool、將分配它的Project以及新的 Floating IP地址本身。

例如:

Allocate Floating IP									
Pool *         10.145.0.192/26 Management         Project *         Core         Floating IP Address (optional) €         10.145.0.249	<b>Description:</b> From here you can allocate a floating IP to a specific project.								
	Cancel Allocate Floating IP								

步驟4.按一下Allocate Floating IP 按鈕。

步驟5.在「展望期」頂部選單中,定位至「**專案」>「常式」。** 

步驟6.在Action列中,按一下Create Snapshot按鈕中指向下方的箭頭,此時將顯示一個選單。選擇 **關聯浮動IP**選項。

步驟7.在IP Address 欄位中選擇要使用的相應浮動IP地址,並從要在要關聯的埠中分配此浮動IP的 新例項中選擇相應的管理介面(eth0)。請參考下一張影象作為此過程的示例。

# Manage Floating IP Associations IP Address\* 10.145.0.249 Image Floating IP Associations Select the IP address you wish to associate with the selected instance or port. Port to be associated \* AAA-CPAR-testing instance: 172.16.181.17 Cancel Associate

步驟8.按一下Associate。

啟用SSH

步驟1。在「展望期」頂部選單中,定位至**「專案」>「例項」。** 

步驟2.按一下在Cunch a new instance部分中建立的例項/VM的名稱。

步驟3.按一下Console 索引標籤。這將顯示VM的CLI。

步驟4.顯示CLI後,輸入正確的登入憑證:

使用者名稱:**根** 

密碼:cisco123

Red Hat Enterprise Linux Server 7.0 (Maipo) Kernel 3.10.0-514.el7.x86\_64 on an x86\_64

aaa-cpar-testing-instance login: root Password: Last login: Thu Jun 29 12:59:59 from 5.232.63.159 [root@aaa-cpar-testing-instance ~]#

步驟5.在CLI中輸入命令vi /etc/ssh/sshd\_config編輯ssh配置。

步驟6.開啟ssh配置檔案後,按I編輯該檔案。然後查詢下面顯示的部分,並將第一行從 PasswordAuthentication no 更改為PasswordAuthentication yes。 # To disable tunneled clear text passwords, change to no here! PasswordAuthentication yes\_ #PermitEmptyPasswords no PasswordAuthentication no

步驟7.按ESC並輸入:wq!儲存sshd\_config檔案更改。

步驟8.運行命令service sshd restart。

```
Iroot@aaa-cpar-testing-instance ssh]# service sshd restart
Redirecting to /bin/systemctl restart sshd.service
Iroot@aaa-cpar-testing-instance ssh]#
```

步驟9.為了測試已正確應用SSH配置更改,請開啟任何SSH客戶端,並嘗試使用分配給例項的浮動 IP(例**如10.145.**0.249)和使用者**root**建立遠端安全連線。

```
[2017-07-13 12:12.09] ~
[dieaguil.DIEAGUIL-CWRQ7] ≻ ssh root@10.145.0.249
Warning: Permanently added '10.145.0.249' (RSA) to the list of known hosts
.
root@10.145.0.249's password:
X11 forwarding request failed on channel 0
Last login: Thu Jul 13 12:58:18 2017
[root@aaa-cpar-testing-instance ~]#
[root@aaa-cpar-testing-instance ~]#
```

## 建立SSH會話

使用安裝應用程式的相應VM/伺服器的IP地址開啟SSH會話。

```
[dieaguil.DIEAGUIL-CWRQ7] ➤ ssh root@10.145.0.59
K11 forwarding request failed on channel 0
Last login: Wed Jun 14 17:12:22 2017 from 5.232.63.147
[root@dalaaa07 ~]#
```

## CPAR例項啟動

一旦活動完成並且可以在關閉的站點中重新建立CPAR服務,請按照以下步驟操作。

- 1. 要重新登入到Horizon,請導航到專案>例項>啟動例項。
- 2. 驗證例項的狀態是否為「active(活動)」 ,電源狀態是否為「running(運行)」:

## Instances

					Instance Name = •				Filter	Laund	h instance	Delete Instanc	More Actions -
	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Por	wer State	Time sin	ce created A	ctions
a	diaza04	dilaaa01-sept092017	diameter-routable1 • 10.160.132.231 radius-routable1 • 10.160.132.247 tb1-mgmt • 172.16.181.16 Floating IPs: • 10.250.122.114	AAA-CPA	R -	Active	AZ-diaaa04	None	Ru	ning	3 months		Create Snapshot +

# 活動後運行狀況檢查

步驟1.在作業系統級別執行命令/opt/CSCOar/bin/arstatus。

[root@wscaaa04	~]# /opt/CSCOar/bin/arstat	us	
Cisco Prime AR	RADIUS server running	(pid:	24834)
Cisco Prime AR	Server Agent running	(pid:	24821)
Cisco Prime AR	MCD lock manager running	(pid:	24824)
Cisco Prime AR	MCD server running	(pid:	24833)
Cisco Prime AR	GUI running	(pid:	24836)
SNMP Master Age	ent running	(pid: 24	1835)
[root@wscaaa04	~]#		

步驟2.在作業系統級別執行命令/opt/CSCOar/bin/aregcmd,然後輸入管理員憑據。驗證CPAR Health(CPAR運行狀況)為10(滿分10)並退出CPAR CLI。

[root@aa02 logs]# /opt/CSCOar/bin/aregcmd Cisco Prime Access Registrar 7.3.0.1 Configuration Utility Copyright (C) 1995-2017 by Cisco Systems, Inc. All rights reserved. Cluster: User: admin Passphrase: Logging in to localhost [ //localhost ] LicenseInfo = PAR-NG-TPS 7.2(100TPS:) PAR-ADD-TPS 7.2(2000TPS:) PAR-ADD-TPS 7.2(2000TPS:) PAR-RDDR-TRX 7.2() PAR-HSS 7.2() Radius/ Administrators/

Server 'Radius' is Running, its health is 10 out of 10 --> exit

步驟3.執行命令netstat | grep diameter並驗證所有DRA連線是否已建立。

下面提到的輸出適用於預期存在Diameter連結的環境。如果顯示的連結較少,則表示與需要分析的 DRA斷開連線。 [root@aa02 logs]# netstat | grep diameter 0 0 aaa02.aaa.epc.:77 mp1.dra01.d:diameter ESTABLISHED tcp tcp 0 0 aaa02.aaa.epc.:36 tsa6.dra01:diameter ESTABLISHED 0 0 aaa02.aaa.epc.:47 mp2.dra01.d:diameter ESTABLISHED tcp 0 0 aaa02.aaa.epc.:07 tsa5.dra01:diameter ESTABLISHED tcp 0 0 aaa02.aaa.epc.:08 np2.dra01.d:diameter ESTABLISHED tcp

## 步驟4.檢查TPS日誌是否顯示CPAR正在處理的請求。突出顯示的值代表了TPS,而那些值是我們需 要注意的。

TPS的值不應超過1500。

[root@wscaaa04 ~]# tail -f /opt/CSCOar/logs/tps-11-21-2017.csv 11-21-2017,23:57:35,263,0 11-21-2017,23:57:50,237,0 11-21-2017,23:58:05,237,0 11-21-2017,23:58:20,257,0 11-21-2017,23:58:50,248,0 11-21-2017,23:59:05,272,0 11-21-2017,23:59:05,272,0 11-21-2017,23:59:35,244,0 11-21-2017,23:59:50,233,0 步驟5.在name\_radius\_1\_log中查詢任何「錯誤」或「警報」消息

[root@aaa02 logs]# grep -E "error|alarm" name\_radius\_1\_log 步驟6.使用以下命令驗證CPAR進程所用的記憶體量:

#### 頂端 | grep radius

[root@sfraaa02 ~]# top | grep radius 27008 root 20 0 20.228g **2.413g** 11408 S 128.3 7.7 1165:41 radius 此突出顯示的值應小於:7Gb,這是應用級別允許的最大容量。